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ABSTRACT

This paper assesses the level of resources to which colleges and universities might reasonably expect access over the next 30 years. It is organized in three sections. The first section examines some historical relationships between higher education and general economic trends. The second section projects resource levels available to higher education over the next 30 years based on various projections of macroeconomic conditions, public confidence levels, and enrollment growth. The final section describes how higher education might best prepare itself for the future, given the uncertainty over resources, and examines what higher education can do to affect both the future growth of the economy and the level of public confidence in the enterprise. College and university trustees and chief executives are called upon to do two things to prepare for the future: (1) plan strategically based on the wide range of possible resource levels that may be available in the future; and (2) give greater consideration to how institution or system resources can be increased, either by fueling economic growth or by taking steps to improve the level of public confidence in higher education. An appendix, which looks at the accuracy of past higher education forecasts, is provided that cautions about the fragility of these predictions. (Sixteen charts, tables, and graphs are provided.) (GLR)

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The Economic Prospects for American Higher Education

Arthur M. Hauptman

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The Economic Prospects for American Higher Education

Arthur M. Hauptman

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Introduction

For American higher education, the 1980s — particularly the latter half of the decade — were marked by moderate enrollment increases and rapid resource growth. But there is good reason to believe this growth will not continue during the first half of the 1990s. And although enrollments probably will increase in the latter half of the 1990s with renewed growth in the traditional college-age population, the prospects for resource growth throughout the decade are not so bright.

This paper assesses the level of resources that colleges and universities might reasonably expect to have access to over the next 30 years. Such a forecasting exercise can be a daunting task, however, in that the track record of predicting trends in American higher education over the past several decades has not been stellar. Many observers in the 1970s and 1980s, for example, missed the mark on the demand for faculty and the growth in enrollments. Past estimates of future resource availability have been similarly inaccurate. With such a record, how much credence can one reasonably give to predictions regarding the economic state of higher education some three decades hence? To provide some cover for this forecasting exercise, this paper presents future resource level estimates based on several possibilities regarding national economic activity, the degree of public confidence in higher education, and enrollment growth.

The bottom line conclusion of this paper is that the resources available to higher education will depend principally on the economy's overall growth. If, for example, the American economy does well over the next 30 years, American higher education can reasonably expect to share in the additional

resources created through sustained economic growth. Even if public confidence in higher education is not high, robust overall economic growth will still funnel more resources to higher education. If, instead, the economy limps along at a modest pace, the resources available to higher education can be expected to be sluggish as well. And if some of the ominous signs on the macroeconomic horizon materialize, then colleges and universities, like many other sectors of the American economy, will be in for a rude awakening, as contraction and readjustment will replace the economics and politics of growth that have characterized the nation since the end of World War II.

Many economists expect that America, at best, will experience modest economic growth in the future. If these predictions are accurate, then higher education must think hard about how it can better use its resources. Colleges and universities will no longer be able to depend on a growing economy to bring in more resources. But neither should they view the economy as something totally outside of their control. Instead, institutions should now be considering ways in which they can enhance the rate of national economic growth — through the quality of their graduates and the research they sponsor, to mention two. More and better college graduates will lead to a more productive economy. The research and knowledge advances made in campus laboratories and classrooms typically translate into technological and economic progress.

More than macroeconomic conditions affect resource levels of higher education, however. Resource levels also will be heavily influenced by the degree of public confidence in higher education. If legislators and the public believe that higher education is doing a good job, colleges and universities will be able to charge higher tuitions and receive a larger portion of the public-resources pie than if the recent concerns about the direction of American higher education intensify over the next several decades.

To address these issues, this paper is organized in three sections. First, it examines some historical relationships between higher education and general economic trends. For example, changes in higher education resources and enrollments since 1920

indicate that over time higher education growth has been uneven. The second section projects possible resource levels available to higher education over the next 30 years based on various projections of macroeconomic conditions, public confidence levels, and enrollment growth. The final section describes how higher education might best prepare itself for the future, given the uncertainty over resources, and examines what higher education can do to affect both the future growth of the economy and the level of public confidence in the enterprise. An appendix, which looks at the accuracy of past higher education forecasts, is provided to remind the reader of the fragility of these predictions.

Section I

Patterns of Enrollments and Resources Since 1920

The growth of the American higher education enterprise, in terms of both resource levels and the number of students, has been highly variable over time. From one decade to the next, growth has not been uniform. (This section, and the paper generally, examines patterns in terms of decades, not because events occur neatly in ten-year increments but because this demarcation seems to be helpful in discerning general trends.) In predicting what future resource levels may be, the uneven patterns of past growth make it inadvisable simply to look at the immediately preceding period of time and then extrapolate into the future.

Chart 1 *(page 6)* compares the growth in faculty and enrollments in each decade since 1920. As the chart indicates, the numbers of students and faculty have not grown at similar rates in each decade. For example, in the 1960s, enrollments more than doubled, while the number of faculty members grew by less than one-fifth. The number of faculty clearly did not keep up with the growth in students in the 1960s, which may help to explain the large-scale expansion in federal fellowships for graduate students during that time. Other than the 1960s, enrollments grew fastest in the 1920s and 1940s (after the end of World War II). By contrast, in the 1930s and 1950s, the number of faculty grew much faster than the number of students, with a resultant decrease in student-faculty ratios. In the 1970s and 1980s, the number of students and faculty grew at roughly comparable rates. (One important trend missed in this highly simplified accounting of students and faculty is the increased proportion of both part-time students and part-time faculty. Thus, one should not put too much credence in these changes in student-faculty ratios without making some adjustment for full-time equivalency.)

Chart 1

AVERAGE ANNUAL CHANGE IN ENROLLMENTS AND NUMBER OF FACULTY, BY DECADE FROM 1920 TO 1990

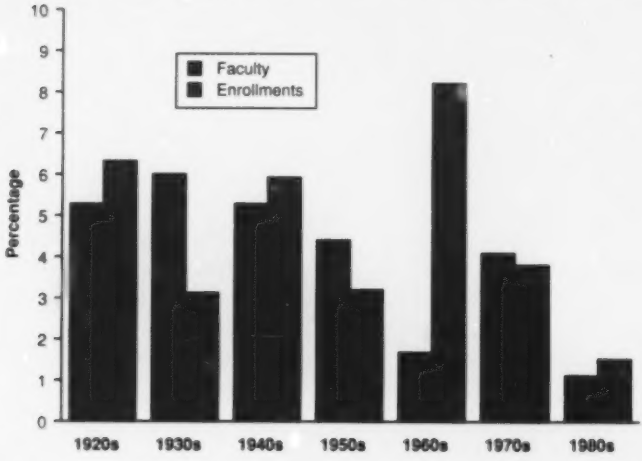


Chart 2

AVERAGE ANNUAL CHANGE IN HIGHER EDUCATION REVENUES, BY DECADE FROM 1920 TO 1990

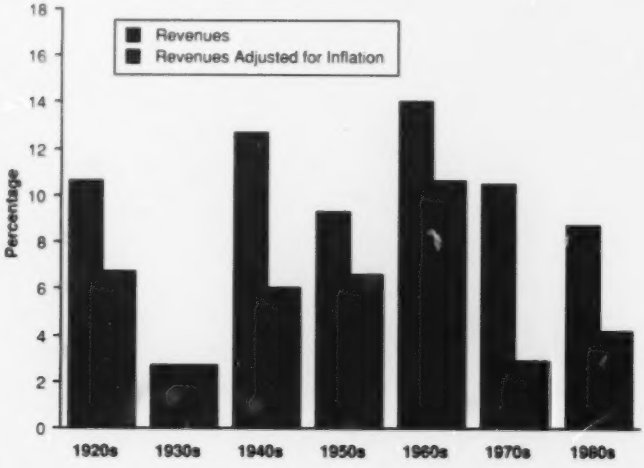


Chart 3

AVERAGE ANNUAL CHANGE IN REVENUES PER STUDENT AND PER FACULTY MEMBER, BY DECADE FROM 1920 TO 1990

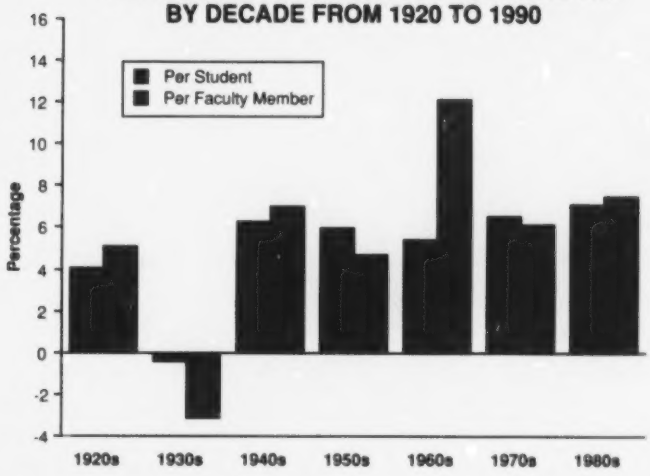


Chart 4

AVERAGE ANNUAL CHANGE IN REVENUES PER STUDENT AND PER FACULTY MEMBER, ADJUSTED FOR INFLATION, BY DECADE FROM 1920 TO 1990

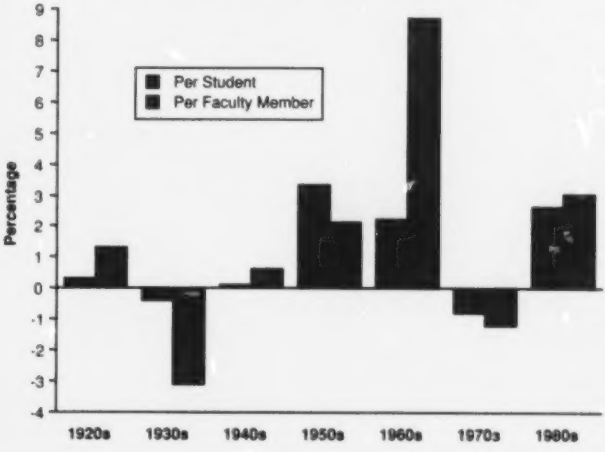


Chart 2 *(page 6)* indicates the growth in revenues for each decade between 1920 and 1990. As the chart shows, the growth in resources has been erratic over time. In the 1960s, revenues in current dollars and in real terms grew fastest, consistent with the notion that the 1960s represented a "golden age" for American higher education. The 1920s, 1940s and the 1950s also represented periods of substantial revenue growth in real terms.

Charts 3 and 4 *(page 7)* indicate the growth in resources per student and per faculty member. Revenues per student in real terms grew fastest in the 1950s; the 1980s had the next highest rate of growth. This contrasts to the 1970s and the 1930s when resources per student actually declined in real terms. Revenues per faculty member grew fastest in the 1960s, with the 1980s once again being the decade with the second fastest growth, and the 1970s and the 1930s showing real declines.

Another way to examine these patterns is to compare the relative growth in the numbers of students with the number of degrees granted, as indicated in Table 1 *(page 9)*. In the 1920s, 1930s, and 1940s, the growth in degrees far outpaced the growth in the number of students. In the 1950s, enrollments grew faster than degrees — at least at the bachelor's degree level. Since the 1960s, the growth in enrollments and degrees have tracked fairly closely.

How do these trends in higher education relate to what is happening in the economy? The most typical way to relate higher education to overall economic activity is to calculate higher education expenditures or revenues as a percentage of the Gross National Product. This measure provides a perspective of the size of higher education as a part of the overall economy. Higher education's share of the economy also provides a rough sense of both the degree of public confidence and the relative level of participation in higher education. The higher the proportion of GNP that is spent on higher education, the greater confidence there is in what higher education is doing and/or the larger the percentage of the population that is enrolled in higher education.

Since 1970, higher education expenditures have constituted at least 2.5 percent of the GNP, as Table 2 *(page 10)* indicates.

Table 1

TRENDS IN FACULTY, STUDENTS, AND DEGREES, 1920 TO 1990 (NUMBERS IN THOUSANDS)

	Faculty	Enrollment	Student/ Faculty Ratio	Bachelor's	Master's	Doctorates
1920	49	598	12.2	49	4	0.6
1930	82	1101	13.4	122	15	2.3
1940	147	1494	10.2	186	27	3.3
1950	247	2659	10.8	432	58	6.4
1960	381	3640	9.6	392	74	9.8
1970	450	8004	17.8	793	208	29.9
1980	675	11570	17.1	929	298	32.6
1990	755	13715	17.8	1050	324	38

PERCENTAGE CHANGE, DECADE TO DECADE

	Faculty	Enrollment	Student/ Faculty Ratio	Bachelor's	Master's	Doctorates
1920s	67%	84%	10%	149%	275%	283%
1930s	79%	36%	-24%	52%	80%	43%
1940s	68%	78%	6%	132%	115%	94%
1950s	54%	37%	-11%	-9%	28%	53%
1960s	18%	120%	86%	102%	181%	205%
1970s	50%	45%	-4%	17%	43%	9%
1980s	12%	16%	4%	12%	7%	17%

Table 2

HIGHER EDUCATION EXPENDITURES AND GROSS NATIONAL PRODUCT (GNP), 1950 TO 1990 (DOLLARS IN BILLIONS)

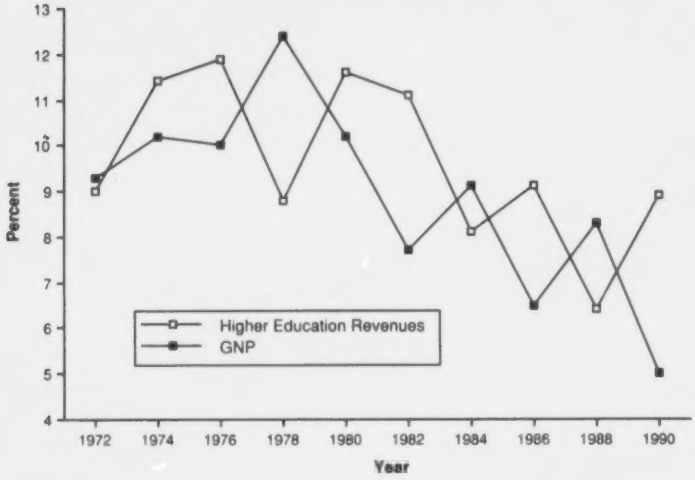
Year	GNP	Higher Ed Expenditures	Higher Ed Spending as % of GNP	*Annual Percentage Change In:* GNP	HE Revenues
1950	288	2	0.8%		
1955	406	5	1.1%	7.1%	13.4%
1960	515	8	1.6%	4.9%	12.2%
1965	705	16	2.2%	6.5%	14.3%
1970	1015	28	2.7%	7.6%	12.0%
1972	1213	32	2.6%	9.3%	7.7%
1974	1473	40	2.7%	10.2%	11.7%
1976	1782	47	2.6%	10.0%	8.9%
1978	2250	55	2.5%	12.4%	8.2%
1980	2732	71	2.6%	10.2%	12.9%
1982	3166	83	2.6%	7.7%	8.8%
1984	3765	98	2.6%	9.1%	8.6%
1986	4268	116	2.7%	6.5%	8.6%
1988	5010	135	2.7%	8.3%	7.9%
1990	5527	148	2.7%	5.0%	5.4%

Before the 1970s, this figure was decidedly lower, but not because there was less confidence in higher education — if anything, public confidence in higher education was greater in the 1960s than it is today. More important in explaining the lower proportion of GNP devoted to higher education in the 1960s and before is that a much smaller percentage of the population was enrolled in higher education. In 1965, for example, 3 percent of the population was enrolled in higher education; today that figure exceeds 5 percent.

The higher rate of participation in higher education in the 1990s is a function of both the larger percentage of traditional college-age youth who enroll in college for at least a year and the

Chart 5

ANNUAL PERCENTAGE CHANGE IN GNP AND HIGHER EDUCATION REVENUES, 1970 TO 1990



much larger number of older college students. Nearly 60 percent of high school graduates now enroll in college in the fall following their graduation — an all-time high. And the number of college students who are older than the traditional college age continues to increase, so that the older college student is no longer the non-traditional one.

Comparing the growth of higher education revenues and the GNP is another way to examine the relationship between higher education and the economy. Chart 5, above, indicates the average rate of change in the GNP and higher education revenues since 1972. It is interesting that the growth in higher education revenues appears to lag behind the economy's growth in a fairly systematic way. The rate of economic growth consistently seems to precede the increase in higher education revenues by a year or two.

It is also the case that the relationship between higher education and the economy goes beyond comparing the changes in

higher education resources and the GNP. Higher education affects the rate of growth in the economy in a number of discernible, if not easily measurable, ways. For example:

- What college students learn and the quality of the individuals who enroll and graduate from college have a tremendous impact on the underlying strength of the economy. The human-capital base is no less important than the physical-capital base to the future growth of the economy.

- Colleges and universities employ several million individuals, including more than 700,000 faculty members, representing 2 to 3 percent of the total work force. In many localities, colleges and universities are the largest employers and a major economic force in the community.

- More than half of all basic research in the country is conducted on university campuses or with university affiliation. The list of discoveries and inventions stemming from this research is staggering.

Section II

The Resource Prospects for the Next Three Decades

This section explores the question of how fast the resources available to higher education are likely to grow over the next 30 years. The short and overly simplistic answer to this question is: It depends critically on the future economy, which affects all of the major sources of financing for higher education. The state of the economy, for example, largely determines the level of state financial support, which remains the single largest source of funding for higher education. Roughly 30 percent of all higher education revenues currently comes from the states, mostly as general support to public institutions. (A much smaller proportion of state funds for higher education is devoted to state student-aid programs, support for independent institutions, support of research, and other appropriations for designated purposes.)

When the economy performs well, state revenues tend to rise faster, and higher education benefits. Because public college tuitions are the bridge between what the state provides and institutional budgets, tuitions at public colleges tend to rise less sharply during good economic times when state funds are more available. The basic problem with the current system of state finance of higher education arises when the economy goes sour. During a recession, state funds tend to shrink, accelerating tuition increases. The unfortunate consequence is that public college tuitions increase most when students and their families can least afford to pay the higher prices.

The economy, of course, also substantially affects the growth of federal revenues and spending, including expenditures for higher education. For the past several decades, policy makers have depended on a strong economy to "grow" out of the federal budget deficit. Projections of a federal surplus sometime in the

future have been regularly produced based on an assumption of a strong economy. Yet, despite the robust economy for most of the 1980s, the deficit grew by historic proportions.

Economic growth also determines the growth in family incomes, which affects the ability of parents and students to pay for college. Presumably, the more that income grows, the greater the ability of parents and students to pay and the higher that colleges and universities can set tuitions.

A good economy also can affect the willingness of students to pay, since a good economy usually means a better job market for college graduates. One reason families may have been willing to pay higher tuitions in the 1980s was that the wage premium between college and high school graduates widened considerably, serving as an indicator that attending college was worth the financial outlay. Also, a healthy economy usually translates into more voluntary giving and a strong stock market, both of which enhance the size of college endowments over time. The other major source of funding for higher education, sales and services, also is likely to increase when the national economy does well.

As was discussed in the introduction to this paper, however, the level of resources available to higher education depends on more than economic growth. Another factor is the degree of public confidence in higher education. Additionally, enrollment growth over time plays a critical role in determining how much money is provided to each student.

The link between resources growth and the public's confidence in higher education is less obvious than the relationship between funding and the growth in the economy, but it is no less important. State funding tends to increase at a higher rate when governors and legislators are satisfied with the education that is being provided and when there is confidence in administrators' and trustees' abilities and performance. Parents and students are more willing to pay higher tuitions when they perceive they are getting their money's worth. Voluntary giving by alumni, foundations, and corporations also is likely to increase more when the system is perceived to be working well.

The pattern of enrollments over time affects both the level of overall funding provided to higher education and the amount provided to each student. Formal funding formulas that incorporate enrollment levels as a critical variable are used in more than half the states; in most other states, enrollments are a more informal, but nonetheless important, component in the funding equation. Thus, at the state level, enrollments tend to translate directly into dollars. The growth in enrollments in turn becomes a critical component in determining the resources available per student.

Simulating Resource Availability in the Year 2020. What level of resources can higher education expect to have in the year 2020? One way to address this question is to assume that the resources available to higher education will rise in proportion to the economy's growth so that higher education maintains its current share of the economy over time. Using this fairly simplistic approach, if the economy grows at a fairly robust rate of 3 percent per year in real terms, then the total spending for higher education would grow from about $150 billion in 1990 to roughly $365 billion (in 1990 dollars) by 2020. By the same token, if the economy does not grow at all in real terms over the next 30 years, then higher education would still have the same $150 billion in 1990 dollars when the year 2020 rolls around.

But the share of the economy devoted to higher education may well change for a variety of reasons, including possible shifts in public confidence in higher education and changing enrollment patterns. One way to factor each of these considerations into the calculation of future resource levels is to make an educated guess on the economy's future growth, the level of public confidence, and the growth of enrollments over the next three decades, and to estimate the level of resources produced. Given the degree of uncertainty regarding each of these three factors, however, it is more reasonable to use a range of possibilities than to rely on a single point estimate.

To this end, a simple model is presented here that estimates the level of resources per student for higher education under three different scenarios of economic growth, public confidence, and enrollment growth.

The three overall economic scenarios used in the model are as follows:

- "The Sky's the Limit" projects robust economic growth of 3 percent per year in real terms throughout the next three decades. Such growth would be high relative to the average in this country over the last 50 years.

- "Muddling Through" projects an average real economic growth rate throughout the three decades of roughly 1.5 percent per year. This scenario assumes periods of robust growth interspersed with several severe recessions.

- "The Roof Caves In" projects no economic growth over the 30-year period as a result of intensified global competition and the consequence of years of federal deficit financing.

The level of resources devoted to higher education also will depend on the degree of public confidence in the effectiveness of colleges and universities. This also can be expressed in terms of high, medium, and low scenarios.

- A high level of confidence would be reminiscent of the early and mid-1960s, prior to the protests later in that decade. Some observers refer to this period as the so-called golden age of American higher education.

- A medium level of confidence describes the current situation, where American higher education is regarded as the best in the world, but nagging doubts about its future direction have driven down confidence.

- A low level of confidence may result if the current barrage of concerns remains largely unaddressed, and the traditional American faith in the value of higher education diminishes.

It is difficult, however, to quantify these different degrees of public confidence in higher education. After all, no single index is available that measures changes in the nation's attitude toward its colleges and universities.

One possible gauge of public confidence, however, is the percentage of GNP devoted to higher education. For example, it might be the case that in an era of good feeling toward higher education, such as the early 1960s, a higher-than-average share of GNP was devoted to higher education. Regrettably, this was not the case, as the percentage of GNP for higher education was substantially lower in the 1960s than it has been in the last two decades. As noted earlier, this is largely a function of a smaller percentage of the population being enrolled in higher education at that time.

What is needed, then, is a measure of higher education's share of the economy that takes into account changes in enrollment patterns over time. One such measure is higher education spending per student as a percent of GNP per capita. This percentage, which should be viewed more as an index than as a real measure of anything, correlates nicely with the perceived changes in the public's perception of higher education. As Table 3 *(page 16)* indicates, from 1950 to 1970, higher education spending per student ranged between 65 and 75 percent of GNP per capita. Since 1970, the figure has ranged between 55 and 65 percent. Thus, in this simulation, we use 75 percent as a measure of a high degree of public confidence in higher education, 60 percent as a medium level, and 50 percent as a low level.

In terms of enrollment growth, the three scenarios used are:

- High enrollment growth is 2 percent per year — a figure at the high range of what can happen in the future given present participation rates among both traditional-age and older college students.
- Moderate enrollment growth is assumed to be 1 percent per year — akin to 1980s gains in the numbers of college students.
- For this exercise, we have assumed that a low rate of growth is no enrollment increase at all.

Table 3

HIGHER EDUCATION SPENDING PER STUDENT AS A PERCENTAGE OF GNP PER CAPITA

Year	GNP Per Capita	HE Spending Per FTE Student	Higher Ed Spending per Student as % of GNP per Capita
1950	1907	1412	74%
1955	2461	1667	68%
1960	2861	1933	68%
1965	3653	2660	73%
1970	4951	3707	75%
1972	5804	3575	62%
1974	6915	4255	62%
1976	8212	4671	57%
1978	10181	5595	55%
1980	12088	6882	57%
1982	13706	8022	59%
1984	15953	9204	58%
1986	17783	11230	63%
1988	20533	12325	60%
1990	22100	14200	64%

Possible future resource levels for American higher education can therefore be analyzed and projected according to changes in each of these three factors, as indicated in Tables 4, 5, and 6. For purposes of this discussion, current fund expenditures per full-time-equivalent (FTE) student are used as the measure of the current level of resources, rather than an aggregate level of resources. This measure shows the effect of enrollment growth on the amount of resources available per student. In these estimates, the real rate of growth in GNP per capita is the indicator of possible growth in the economy. Assuming 1 percent per year growth in population, annual growth in GNP per capita will be roughly 1 percent less than the growth in the GNP.

Table 4 *(page 21)* indicates the results of the simulation that assumes a moderate rate of increase in enrollments of 1 percent per year over the next 30 years. Several interesting trends emerge from this simulation. First and foremost, the future path of the economy appears to be a far more important factor in determining the future level of resources available to higher education than the foreseeable changes in levels of public confidence.

As the table shows, no matter what level of public confidence is assumed, the amount of resources per student for higher education will increase in real terms if the economy grows robustly over the next 30 years. If public confidence levels are also high, then the amount of resources per student will more than double in real terms between 1990 and 2020, from the 1990 level of $14,200 to nearly $30,000 in 2020 (an increase of 110 percent in real terms). But even if public confidence in higher education is low at that time, the amount of resources per student (roughly $20,000) would be 40 percent higher than current levels.

Conversely, what happens if economic growth is nonexistent over the next three decades? Resources per student will decline no matter how high the level of public confidence is in higher education. If low economic growth combines with low levels of public confidence, the amount of resources per student would drop by 42 percent by the year 2020 in real terms. If public confidence is high, however, with no economic growth, resources per student will still be 13 percent lower in 2020 than in 1990.

Tables 5 and 6 *(pages 22 and 23)* indicate the future level of resources per student under the alternative enrollment growth scenarios of 2 percent per year and no enrollment growth, respectively. Although the dollar figures differ from the projections using moderate enrollment growth assumptions, the relative influence of the economy and public confidence levels on resource availability is similar. If enrollment growth is high, as shown in Table 5 *(page 22)*, economic growth and public confidence in higher education would both have to be at least moderate for resources per student to grow over time. Low levels of either public confidence or economic growth would lead to a real reduction in resources per student.

With no growth in enrollment, the amount of resources per student naturally would be higher *(see Table 6 on page 23)* than under higher enrollment scenerios. With high economic growth and high levels of public confidence in higher education, resources per student would nearly triple in real terms to more than $40,000 by 2020 if enrollments do not increase. Unlike the other enrollment scenerios, however, with no growth in enrollment, resources per student would grow even if there were no economic growth, as long as public confidence is high. But a combination of low or moderate levels of economic growth and public confidence will result in only modest increases or possibly decreases in resources per student, if enrollments do not grow.

The importance of the economy to the future growth of higher education resources is confirmed by projections made by Michael McPherson and Morton Schapiro in *Keeping College Affordable*, a book recently published by the Brookings Institution. The authors produce estimates of the tuition dependence of different types of institutions under a variety of assumptions, including the economy's performance. For public four-year institutions, tuition dependence grows from the current 20 percent of total revenues to more than 40 percent by the year 2010 if the economy is weak. If the economy is strong over the 20-year period, however, McPherson and Schapiro estimate that tuition dependence will drop to 12 percent. Similarly, for private four-year institutions, a weak economy increases tuition dependence from 60 percent in 1990 to 68 percent in 2010, while tuition dependence drops to 53 percent in a strong economy.

McPherson and Schapiro provide similar projections for the affordability of college under a variety of economic assumptions. They estimate that the ratio of net price to family income for students at public four-year institutions would rise from 9 percent in 1990 to 15 percent in 2010 if the economy is weak over the next 20 years, but the ratio declines by roughly half, to 4.6 percent, if the economy is strong. At private four-year institutions, where affordability is obviously of greater concern, this ratio would increase from 18 percent in 1990 to 28 percent in 2010 with a weak economy, but drops to 13 percent in a strong economy.

Table 4

RESOURCE LEVELS AVAILABLE TO HIGHER EDUCATION IN THE YEAR 2020 ASSUMING 1 PERCENT PER YEAR GROWTH IN ENROLLMENTS

(Stated in terms of 1990 Dollars)

1990 Resources per Student	$14,200
1990 GNP per Capita	$22,100
Enrollment Growth per Year	1%

		Economic Growth Projections Annual Real Rate of Growth in GNP per Capita		
		High	Medium	Low
Public Confidence Levels		3%	1.50%	0%
Resources per Student as a % of GNP per Capita				
High	75%	$29,849	$19,222	$12,297
Medium	60%	$23,879	$15,377	$ 9,838
Low	50%	$19,899	$12,815	$ 8,198

Change from 1990 Levels

		Economic Growth Projections Annual Real Rate of Growth in GNP per Capita		
		High	Medium	Low
Public Confidence Levels		3%	1.50%	0%
Resources per Student as a % of GNP per Capita				
High	75%	110%	35%	-13%
Medium	60%	68%	8%	-31%
Low	50%	40%	-10%	-42%

Table 5

RESOURCE LEVELS AVAILABLE TO HIGHER EDUCATION IN THE YEAR 2020 ASSUMING 2 PERCENT PER YEAR GROWTH IN ENROLLMENTS

(Stated in terms of 1990 Dollars)

1990 Resources per Student	$14,200
1990 GNP per Capita	$22,100
Enrollment Growth per Year	2%

		Economic Growth Projections Annual Real Rate of Growth in GNP per Capita		
		High	Medium	Low
Public Confidence Levels Resources per Student as a % of GNP per Capita		3%	1.50%	0%
High	75%	$22,211	$14,303	$ 9,151
Medium	60%	$17,769	$11,442	$ 7,320
Low	50%	$14,807	$ 9,535	$ 6,100

Change from 1990 Levels

		Economic Growth Projections Annual Real Rate of Growth in GNP per Capita		
		High	Medium	Low
Public Confidence Levels Resources per Student as a % of GNP per Capita		3%	1.50%	0%
High	75%	56%	1%	-36%
Medium	60%	25%	-19%	-48%
Low	50%	4%	-33%	-57%

Table 6

RESOURCE LEVELS AVAILABLE TO HIGHER EDUCATION IN THE YEAR 2020 ASSUMING NO GROWTH IN ENROLLMENTS

(Stated in terms of 1990 Dollars)

1990 Resources per Student	$14,200
1990 GNP per Capita	$22,100
Enrollment Growth per Year	0%

		Economic Growth Projections Annual Real Rate of Growth in GNP per Capita		
		High	Medium	Low
Public Confidence Levels Resources per Student as a % of GNP per Capita		3%	1.50%	0%
High	75%	$40,232	$25,908	$16,575
Medium	60%	$32,186	$20,726	$13,260
Low	50%	$26,821	$17,272	$11,050

Change from 1990 Levels

		Economic Growth Projections Annual Real Rate of Growth in GNP per Capita		
		High	Medium	Low
Public Confidence Levels Resources per Student as a % of GNP per Capita		3%	1.50%	0%
High	75%	183%	82%	17%
Medium	60%	126%	46%	-7%
Low	50%	89%	22%	-22%

One final note on the level of future resource needs: It may well be the case that the necessary amount of resources to educate a student is higher now than what was needed previously. A number of observers have argued that the changing characteristics of college students — more of them now are lower income, older, and part-time — have led over time to higher costs per student as colleges have sought to meet their need for enhanced services. To the extent these trends in student characteristics continue, one can surmise that the level of resources needed to provide the same education will increase over time. If this is true, it will not be sufficient to maintain the current level of resources per student in real terms simply to ensure that the quality of the education provided remains the same. Additional resources over current levels may be required just to stay even in terms of educational quality.

It also is possible, however, that the opposite result could occur. Colleges and universities, faced with pressures from all sides, could react by slashing the amount of resources invested per student, increasing class sizes, increasing faculty teaching loads, keeping faculty and other personnel salary increases below inflation, and cutting many of the services that were expanded during the 1980s. In short, adversity in the 1990s could reverse the increased resources gained in the mid- to late-1980s.

Section III

PREPARING FOR THE FUTURE

Uncertainty over the level of resources that will be available to higher education in the future should have at least two effects on the thinking of college trustees, administrators, and others involved in higher education. One effect is that colleges and universities should be doing more in the way of long-range planning based on the wide range of possible resource levels that may be available in the future. The other is that colleges and universities should be giving greater consideration to how they can increase their resources, either by fueling economic growth or by taking steps to improve the level of public confidence in higher education, thereby paving the way for more substantial future levels of resources.

It seems clear that higher education cannot plan on enjoying in the near term or in the foreseeable future the same growth in resources that occurred in the 1980s. In the short term, the economic recession and the continuing criticisms of higher education are likely to limit resource growth. In the longer term, resource constraints will be imposed through heightened global economic competition, more demands on both federal and state dollars, and an unwillingness or inability of an increasing number of families and students to pay increasing tuitions, among other reasons.

In the face of these fiscal realities, college officials should be thinking harder about better ways to use available resources. The next several decades will most likely entail making more difficult choices than in the past. To help in making these choices, it will be critical to plan ahead, not to be caught off guard by developments that could have been predicted many years before. Most colleges and universities no doubt have long range plans of one form or another, but it is worth asking: How seriously are these plans developed and debated within the institution? I expect in far too many cases the answer is: Not very much.

In this regard, higher education is no worse than many other segments of our society. We collectively seem reluctant to take a hard look at the future. Certainly the federal and state governments do very little planning beyond the next election. Businesses probably do more than government, but excessive attention to growth in the short term bottom line tends to overwhelm long term planning needs. An economist might say that, as a society, we use a much too high discount rate in thinking about the future.

In planning for that future, college and university officials must be prepared to deal with a variety of resource levels based on a continuum of possible economic conditions and levels of public confidence in higher education. To do this, institutions need to assess the likelihood of these different scenerios occurring. It makes little sense for college officials simply to assume that the economy will thrive over the next several decades or that public confidence in higher education will be fully restored, thereby resulting in a period of virtually unlimited resource growth. It is also senseless to assume, however, that the United States is on the brink of an economic disaster similar to the Great Depression of the 1930s, or that the accumulated goodwill that colleges and universities have earned over time with the American public will totally crumble in the face of a variety of attacks. The proper approach is to plan based on a fairly realistic range of *reasonable* possibilities.

The potential constraints on traditional resources also make it critical for higher education to explore ways in which the level of available resources might be increased, either through faster growth in the economy or improving public confidence in the mission and purposes of higher education. In this regard, college officials should not view themselves as simply reactive to trends, but as shapers of them.

It is reasonably obvious what colleges and universities must do to maintain or improve the level of public confidence in higher education. They need to ensure that the education provided is of high quality, and that the products of the system — the recipients of associate, bachelor's, and advanced degrees — are also of high quality. The research performed on campus and the

various components of public service provided by colleges and universities also must be held in high regard. Although the recent spate of criticisms of higher education indicate that it is certainly not a foregone conclusion that public confidence levels will be sustained, at least it is fairly obvious what colleges and universities can do to affect this matter.

What is less obvious, however, is what higher education can do to improve the economic environment in which it operates. There is a tendency among educators to view the economic milieu as an external force — in statistical parlance, an exogenous variable — that acts upon higher education. In that regard, this paper's emphasis on the importance of the economy to the future financial health of higher education belies the fact that the relationship between higher education and the economy is very much a two–way street. The quality of the research performed and the education provided on American campuses exert great influence on the economy's ability to grow.

This exercise has looked almost exclusively at the other side of the equation — the extent to which economic and related factors are likely to affect the resource levels that will be available to higher education. But higher education can do itself a big favor by starting to view the economy more as an endogenous variable, something which colleges and universities can and should affect. Moreover, if higher education officials are unwilling or unable to develop such a perspective, they may be in for a long winter of resource constraints and attendant unhappiness.

Appendix

The Perils of Forecasting in Higher Education

Analysts of higher education in the second half of the 20th century cannot take great pride in their ability to predict the path which the enterprise took in recent decades. Several major trends have either not been predicted or the predicted results have been quite contrary to what actually happened. These mispredicted trends include the rate of growth in enrollments beginning after the Second World War and continuing through the 1960s; the oversupply of faculty which occurred in the 1970s; and the unexpected growth in resources in the second half of the 1980s.

The purpose of this appendix is to remind the reader of the fragility of these forecasts by comparing some predictions for the condition of higher education in 1990 that were made at the beginning of the 1980s and comparing them to what actually happened in 1990. In this context, the following charts compare the forecasts for the 1990 academic year that were made in 1982 by the Department of Education's National Center for Education Statistics with the actual numbers. These projections included high, intermediate, and low alternative estimates for enrollments, faculty, degrees granted, and current fund expenditures. The analysis presented here also touches upon 1990 projections that were made by the Department of Education as recently as 1985.

What the charts indicate is that in several cases, and particularly in the area of finance, the actual 1990 numbers fell outside of any of the projected ranges. In other instances, the actual numbers were in the range of prediction, but not particularly close to the mid–point estimate.

Full-Time Equivalent Enrollment: The actual full-time equivalent enrollment of 9.9 million in 1990 fell closest to the 1982 high alternative estimate for 1990 of 10.4 million. Interestingly, 1982

predictions for enrollments in 1990 ended up being far more accurate than projections that were made three years later in 1985. The 1985 range of projections was between 7.6 million and 9.6 million, which were exceeded by the actual 1990 FTE enrollments.

Faculty: The actual number of 1990 faculty, 762,000, fell between the 1982 projection's low and intermediate ranges (723,000-799,000), while the high alternative projection of 986,000 exceeded the actual faculty total by 225,000. In this case, the 1985 high projection of 764,000 almost exactly equalled the actual 1990 total.

Degrees Granted: In projecting the number of bachelor's degrees granted, the 1982 projections for 1990 were slightly more accurate than those made in 1985, although both were reasonably close to the actual figures. The 1982 high alternative of 1,054,000 was very close to the actual 1,050,000 degrees awarded and the 1985 high alternative of 1,038,000 slightly undershot the actual 1990 total.

The 1982 and 1985 predictions of 1990 master's degrees granted were quite accurate. The 324,000 masters degrees granted in 1990 matched the 1985 predicted high alternative of 322,000 and fell between the 1982 intermediate and high projections (303,000 and 367,000).

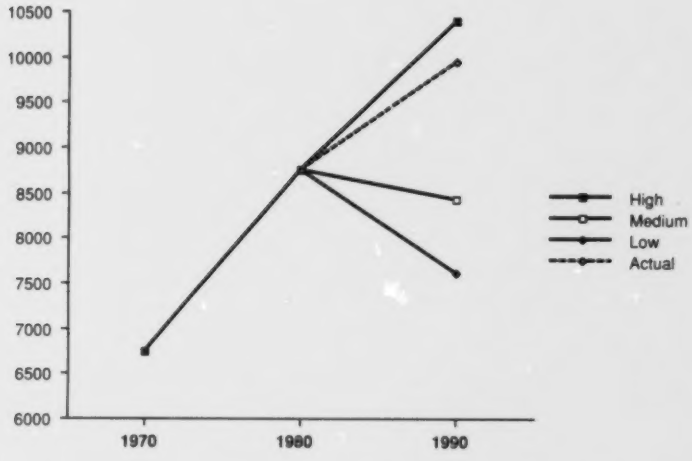
The low, intermediate, and high 1990 projections from 1982 and 1985 for doctorates granted differed little. The actual number granted in 1990, 38,000, fell between the intermediate and high estimates.

Current Fund Expenditures: The 1982 projections for 1990 current fund expenditures turned out to be highly inaccurate. (The 1985 projection report did not include current fund expenditures). The low and high estimates were $53 billion and $74 billion, but the actual 1990 current fund expenditures stated in terms of 1980 dollars were $92 billion, far exceeding projected levels.

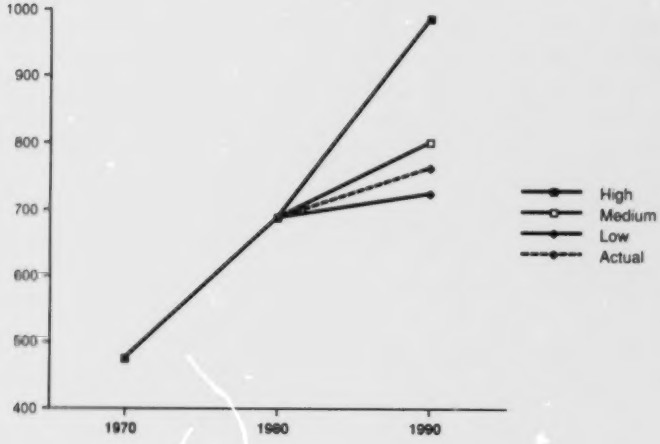
The many variables involved in forecasting make it an inexact science, and this variance is the reason why high, intermediate, and low alternatives are presented. But the fact that many actual 1990 numbers fell outside of projected ranges is testimony to the uncertainty of the future state of higher education and should give great pause to those who attempt to predict future trends.

Appendix Chart 1

FTE ENROLLMENTS, IN THOUSANDS

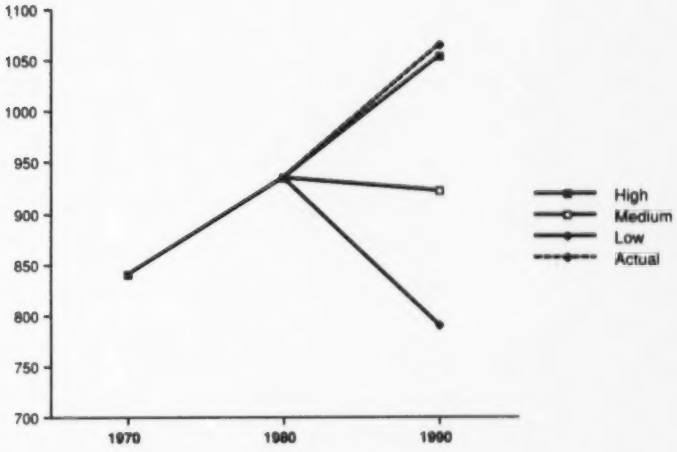


FACULTY, IN THOUSANDS

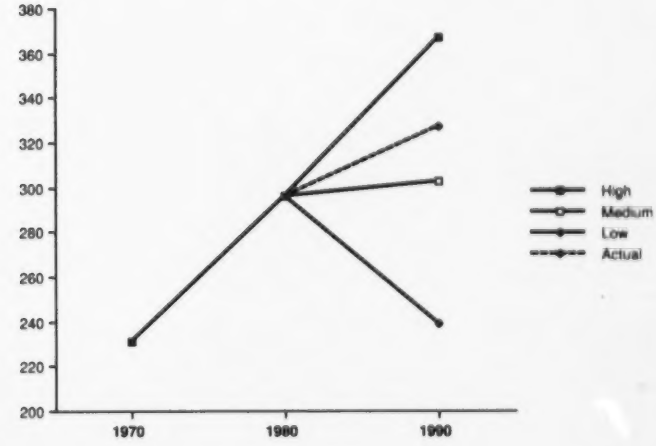


Appendix Chart 2

BACHELOR'S DEGREES AWARDED, IN THOUSANDS

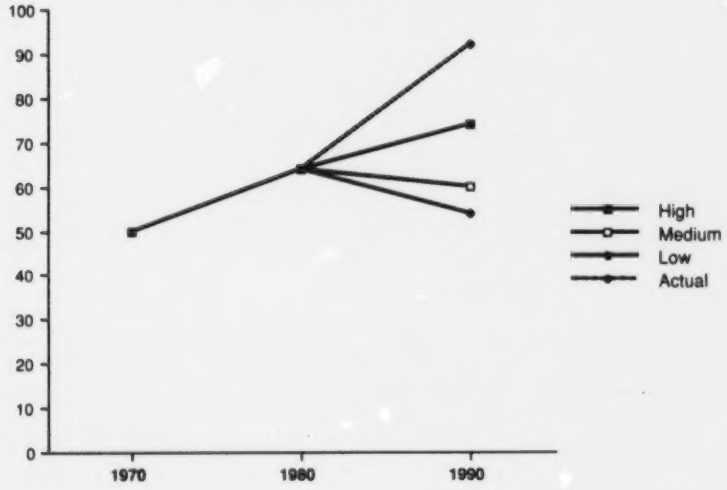


MASTER'S DEGREES AWARDED, IN THOUSANDS



Appendix Chart 3

CURRENT FUNDS EXPENDITURES
(IN BILLIONS OF 1980 DOLLARS)



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